



Starting AMSAT's Lessons Learned Process

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Lessons Learned - Goals

Capture the lessons from previous efforts in order to:

1. Make sure that the information is readily available to current and future AMSAT projects.
2. Demonstrate to the membership that we are learning and making provisions to avoid problems in the future.
3. Capture the things that worked well.



Guidelines

- All inputs from all sources are welcome
- Be available to take input in the format which is comfortable to the person providing the information
- Requests not to be identified will be honored
- Suggestions, Ideas and Observations are welcome
- Ask for positive inputs as well



Contributing Factors

It is usually **not** the person who last touched it or was standing beside it that caused the problem.

- The 4 M's:
Methods, Machines, Materials, Manpower
- The 4 P's:
Place, Procedure, People, Policies
- The 4 S's:
Surroundings, Suppliers, Systems, Skills



Initial Responses

- Test all combinations of all subsystems.
- Test the satellite over the RF links realistically
- All designs should be subject to review by a group of knowledgeable peers
- Procedures and documentation should be detailed enough that no individual becomes a 'single point of failure' in the project or schedule.



Planning

Answers the questions: what, how and why

- Benefits
 - Ensures that all possible interactions are tested
 - Considers the test environment – Is it realistic?
 - Identifies needed resources
 - Makes better use of extremely valuable volunteer time

Procedures

- Contain the details of what is to be done and how
- Must be detailed enough that any member of the team can perform the procedure
- Detailed procedures provide feedback into the planning process by identifying needed resources
- Include steps and checks to ensure that all the systems are operated only within their specifications.



Procedures



AO-40 ground test battery after venting



Reports

- Document the results of testing
- Provide background data for later troubleshooting
- Serve as background information for writing and updating articles for the Journal about the satellite's capabilities as it progresses from design to actual flight hardware.



Positive Results

- AO-40 wiring harness
 - ~4000 Wires correctly built and installed
 - Validated the CAN bus
 - CAN bus will be prime for Eagle
- Documentation required at the launch site
 - Take copies of documentation previously submitted
 - Not a situation unique to Kourou



What's Next?

- Organize current inputs into a database
- Follow-up on leads and comments
- Poll the design/build team for additional comments on each additional major sub-system
- Expanding the scope of the effort
 - The initial inputs have tended toward technical issues but Lessons Learned can be applied to all AMSAT activities



Summary

The overall objective is to produce a more efficient organization, better satellites and most importantly a better structure, environment and experience for the volunteers who make things happen by donating their time and talents.